

## PATENT COOPERATION TREATY

PCT

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

## (PCT Article 36 and Rule 70)

Applicant's or agent's file reference E-3061/05	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/IB2005/000309	International filing date (day/month/year) 08.02.2005	Priority date (day/month/year) 27.02.2004	

International Patent Classification (IPC) or national classification and IPC  
B60S5/04, B60C29/06, B29C73/16

Applicant  
TEK S.R.L.

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>(sent to the applicant and to the International Bureau) a total of 9 sheets, as follows:</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</i></p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>

Date of submission of the demand 27.12.2005	Date of completion of this report 03.03.2006
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Westland, P Telephone No. +31 70 340-3722



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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1, 2, 6-12	as originally filed
3, 3a, 4, 5	filed with telefax on 02.02.2006

**Claims, Numbers**

1-14	filed with telefax on 02.02.2006
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**Drawings, Sheets**

1/4, 3/4, 4/4	as originally filed
2/4	filed with telefax on 02.02.2006

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages 5
  - the claims, Nos. 1
  - the drawings, sheets/figs 2/4
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)                    Yes: Claims        1-14  
                                  No: Claims

Inventive step (IS)            Yes: Claims        1-14  
                                  No: Claims

Industrial applicability (IA)    Yes: Claims        1-14  
                                  No: Claims

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Re Item I**

**Basis of the report**

The amendments filed with the International Bureau under Article 19(1) introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 19(2) PCT. The amendments concerned are the following:

In claim 1, characterising portion, it is said that said outer casing (6) defines **a seat (7) shielding a lateral wall (15a)** of said container (3) of sealing liquid, said container being housed removably in said seat (7).

However, in the description and the figures, only one possible solution to the problem of providing a seat shielding a lateral wall of the container is disclosed, namely (see page 5 of the description as originally filed):

"The seat (7) is bounded laterally by a substantially semicylindrical end wall (10) of the casing (6), and at the bottom by a circular base (14) projecting from the end wall (14)."

Since "defining a seat shielding a lateral wall of said container" would lead to many different possibilities not originally disclosed, the application does not meet the requirements of Article 19(2) PCT. This also applies to amended page 5 of the description and figure page 2/4, where the new feature, lateral wall 15a, has also been introduced.

This report will therefore be based on the on the originally filed claim 1, amended to include the above mentioned text from page 5 of the originally filed description; the amendments to the description and figure will be ignored.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: WO 03/004328 A (ACTIVE TOOLS A/S; LAETGAARD, THOMAS) 16 January

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2003 (2003-01-16)

D2: WO 00/21875 A (DUNLOP GMBH; ECKHARDT, ARNOLD) 20 April 2000  
(2000-04-20)

D3: US 2003/047652 A1 (ECKHARDT ARNOLD) 13 March 2003 (2003-03-13)

D4: US-B1-6 283 172 (THURNER HELMUT) 4 September 2001 (2001-09-04)

1 The document D1 is regarded as being the closest prior art to the subject-matter of independent claim 1, and shows (the references in parentheses applying to this document):

A kit for inflating and repairing inflatable articles, in particular, tyres; the kit comprising a compressor assembly (5,6,7,8), a container (4) of sealing liquid, and connecting means (12,16) for connecting the container (4) to the compressor assembly (5,6,7,8) and to an inflatable article for repair or inflation, whereby it further comprises an outer casing (1) housing said compressor assembly (5,6,7,8) and defining a seat (18) for the container (4) of sealing liquid, said container (4) being housed removably in said seat (18), and also comprises connecting means for stably connecting said container to said compressor assembly (5,6,7,8), so that the container (4), when housed in said seat (18), is maintained functionally connected to said compressor assembly (see Fig. 3,4).

The subject-matter of claim 1 differs from this known kit in that (see Item 1, text re-written to overcome the objection of added subject-matter, Art. 19(2) PCT):

Said outer casing defines said seat, wherein said seat is bounded laterally by a substantially semicylindrical end wall of the casing and at the bottom by a circular base projecting from said end wall, said container being housed removably in said seat.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

2 The problem to be solved by the present invention may be regarded as to provide a kit for inflating and repairing inflatable articles in which the container of sealing liquid is shielded such that it does not project from the housing, thereby making less

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susceptible to damage when being transported.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

- a) In documents D1, D2 and D3 the container protrudes from the housing and therefore susceptible to damage;
- b) In document D4 the liquid container is not so readily replaceable.

3 Claims 2-14 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

4 The kit according to claim 1 is usable to inflate and repair vehicle tyres for example.

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\* See amended page 3a

The container and the compressor are normally separate parts that must be connected prior to use, and which at most are housed for convenience inside the same holder.

5 This therefore involves additional work prior to use.

In one known solution, the container is fitted permanently to the dispenser unit, which incorporates a sealing device. The container, in itself open, is 10 therefore undetachable from the dispenser unit.

Another drawback of this solution is that, when the use-by date of the sealing liquid expires, both the container and the dispenser unit must be replaced, thus increasing cost.

15 In another known solution, the container itself is sealed, e.g. by a sealing membrane, which is split when the container is fitted to the dispenser unit. This means also the dispenser unit must be fitted to the container just prior to use, thus making additional work. \*

20 DISCLOSURE OF INVENTION

It is an object of the present invention to provide a kit for repairing and inflating inflatable articles, designed to eliminate the aforementioned drawbacks typically associated with known kits.

25 According to the present invention, there is provided a kit for inflating and repairing inflatable articles, in particular, tyres; the kit comprising a compressor assembly, a container of sealing liquid, and

3d

WO-A1-03004328 discloses an inflating and sealing tyre unit comprising a flat box housing a compressor unit, a container for a sealing agent and a connection defined by the flat box and fluidly connected to the compressor unit. Usually the container is disconnected from the connection but, when the inflating unit is used for mending a tyre, the container is screwed overhanging in the connection and a sharp edge tears a sealing membrane of the container itself allowing the compressor to pressurize the sealing agent and to deliver it into the tyre.

However, an overhanging container is unsuitable for kits where the container is permanently and stably connected to the connection because it can be easily damaged by accidental shocks.

#### DISCLOSURE OF INVENTION

It is an object of the present invention to provide a kit for repairing and inflating inflatable articles, designed to eliminate the aforementioned drawbacks typically associated with known kits.

According to the present invention, there is provided a kit for inflating and repairing inflatable articles, in particular, tyres according to claim 1.

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connecting means for connecting the container to the compressor assembly and to an inflatable article for repair or inflation, and being characterized by comprising an outer casing housing said compressor assembly and defining a seat for the container of sealing liquid, said container being housed removably in said seat, and by comprising connecting means for stably connecting said container to said compressor assembly, so that the container, when housed in said seat, is maintained functionally connected to said compressor assembly.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective of a repair kit comprising a container of sealing liquid and in accordance with the present invention;

Figure 2 shows a partly disassembled view in perspective of the Figure 1 kit;

Figures 3 and 4 show a rear view and underside view in perspective respectively of the Figure 1 kit partly disassembled;

Figures 5 and 6 show sections, along line V-V in Figure 2, of the container and a dispenser unit of the Figure 2 kit assembled together;

Figure 7 shows a schematic of a pneumatic circuit connected to the Figure 2 kit dispenser unit.

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BEST MODE FOR CARRYING OUT THE INVENTION

Number 1 in Figures 1 to 4 indicates as a whole a kit for fast repair of inflatable articles, in particular, tyres.

5 Kit 1 substantially comprises an electric compressor assembly 2; a container 3 of sealing liquid; a first hose 4 connecting container 3 to compressor assembly 2; and a second hose 5 connecting container 3 to a valve (not shown) of the tyre.

10 In known manner not shown, compressor assembly 2 comprises an electric motor and a compressor - powered by the electric motor - which are housed inside an outer casing 6.

Casing 6 is substantially parallelepiped-shaped and,  
15 at one longitudinal end, defines a seat 7 for housing  
container 3 upside down. More specifically, seat 7 is  
bounded laterally by a substantially semicylindrical end  
wall 10 of casing 6, and at the bottom by a circular base  
14 projecting from end wall 10.

20 Container 3 comprises a vessel 15, preferably in the  
21 especially a... vessel having a valve or valveless port  
22  
23 container 3, to ensure the container is closed fluidtight  
24 when detached from the rest of kit 1, as explained in  
25 detail below.

valve device 18 comprises a body 19 having a lateral wall 15a and

13

## CLAIMS

1) A kit for inflating and repairing inflatable articles, in particular, tyres; the kit comprising a compressor assembly (2), a container (3) of sealing liquid, and connecting means (4, 5) for connecting the container to the compressor assembly (2) and to an inflatable article for repair or inflation, an outer casing (6) housing said compressor assembly (2) and releasable connecting means (4, 40) for stably connecting said container to said compressor assembly (2), so that the container, when housed in said seat (7), is maintained functionally connected to said compressor assembly (2), said kit being characterized in that said outer casing (6) defines a seat (7) shielding a lateral wall (15a) of said container (3) of sealing liquid, said container (3) being housed removably in said seat (7).

2) A kit as claimed in Claim 1, characterized in that said connecting means comprise a compressed-air feed line (4) for feeding compressed air from said compressor assembly (2) to said container (3); said container (3) comprising a vessel (15) having an opening (17), and a valve device (18) fitted in fluidtight manner to the opening (17) and having an

14.

inlet (27c) connectable to said compressed-air feed line (4), and an outlet (29a) for the sealing liquid.

3) A kit as claimed in Claim 2, characterized in that said valve device (18) comprises at least one 5 control member (30) movable, in response to pressurization of said compressed-air feed line (4), from a closed position, closing said valve device (18) and in which said inlet (27c) and said outlet ~~are isolated from the inside of said container~~ that said valve device (18) comprises elastic means 15 (31), for keeping said control member (30) stably in said closed position in the absence of pressure to said inlet (27c).

5) A kit as claimed in one of the preceding Claims, characterized by comprising a dispenser unit 20 (40) detachably connectable to said container (3) and having an inlet fitting (53) connected in fluidtight manner to said inlet (27c) of said valve device (18), and an outlet fitting (50) connected in fluidtight manner to said outlet (29a) of said valve device 25 (18).

6) A kit as claimed in Claim 5, characterized in that said dispenser unit (40) is detachable from said casing (6).

7) A kit as claimed in Claim 6, characterized in 5 that said seat (7) comprises a base portion (14) having fast-fit fastening means (49) by which to secure said dispenser unit (40) to said casing (6).

8) A kit as claimed in Claim 7, characterized in that said fastening means (49) comprise a bayonet 10 connection.

9) A kit as claimed in one of Claims 5 to 8, characterized in that said dispenser unit (40) comprises a cavity (48) to which is fitted a neck (16) of said container (3) in an upside down 15 position; said neck (16) defining said opening (17).

10) A kit as claimed in any one of the preceding Claims, characterized by comprising an additional hose (83) cooperating with said inflatable article; and a three-way valve (81) input connected to said 20 compressor assembly (2), and output connected to said container (3) and to said additional hose (83) to direct a stream of compressed air selectively to said container (3) or to said additional hose (83).

11) A kit as claimed in Claim 9, characterized 25 in that said three-way valve (81) is controlled by a

selector (85) which can be set to a disabling position, in which operation of said compressor assembly (2) is disabled; to a first enabling position, in which operation of said compressor assembly (2) is enabled, and said container (3) is connected fluidically to said compressor assembly (2); and to a second enabling position, in which operation of said compressor assembly (2) is enabled, and said additional hose (83) is connected fluidically to said compressor assembly (2).

12) A kit as claimed in any one of the preceding Claims, characterized in that at least one of said connecting means (4) and said additional hose (83) is connected to a relief valve (87).

15 13) A kit as claimed in any one of the preceding Claims, characterized in that said connecting means (5) comprise a non-return valve.

14) A kit as claimed in Claim 7, characterized in that said fastening means comprise a fast-fit 20 click-on coupling.

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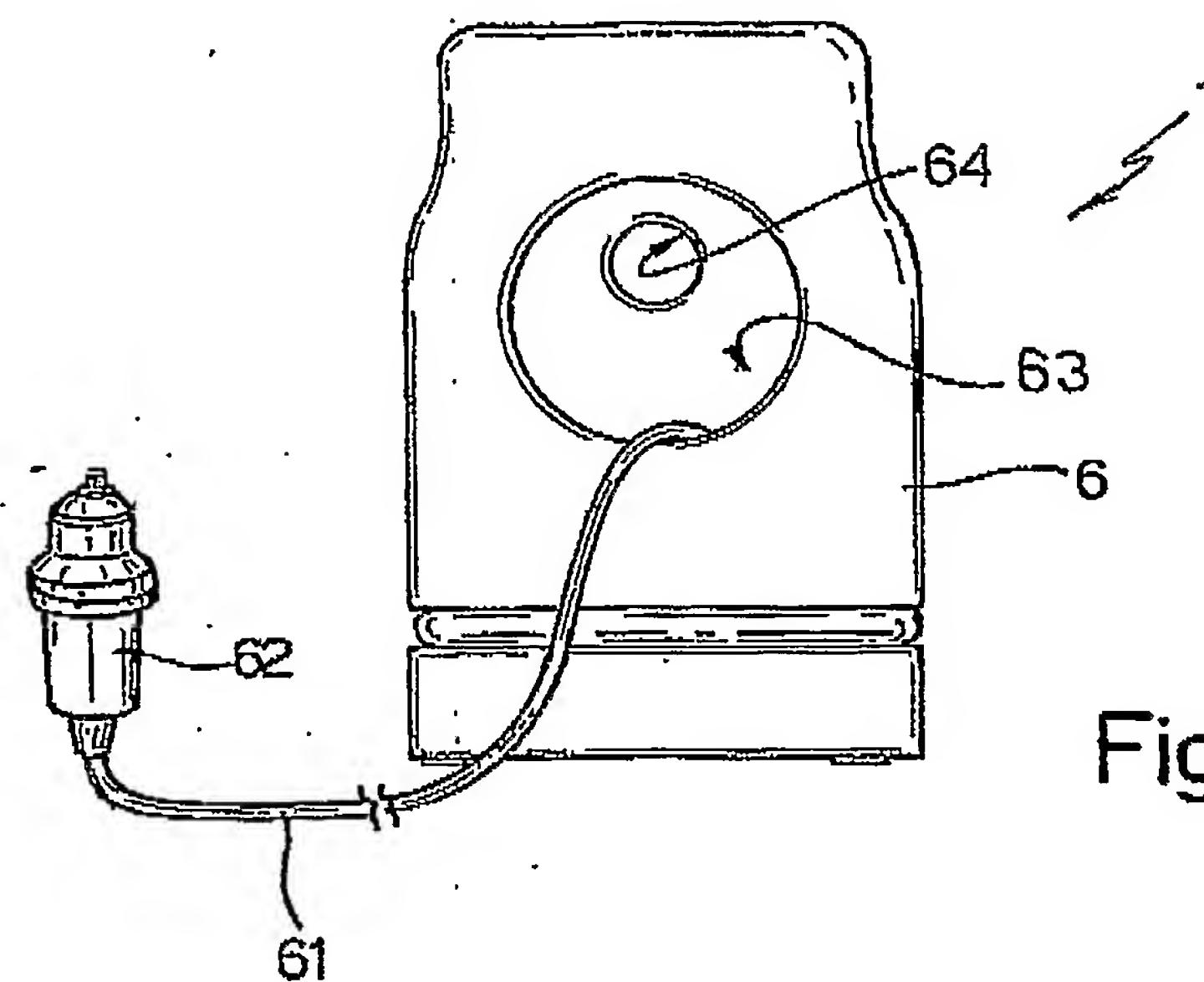


Fig. 3

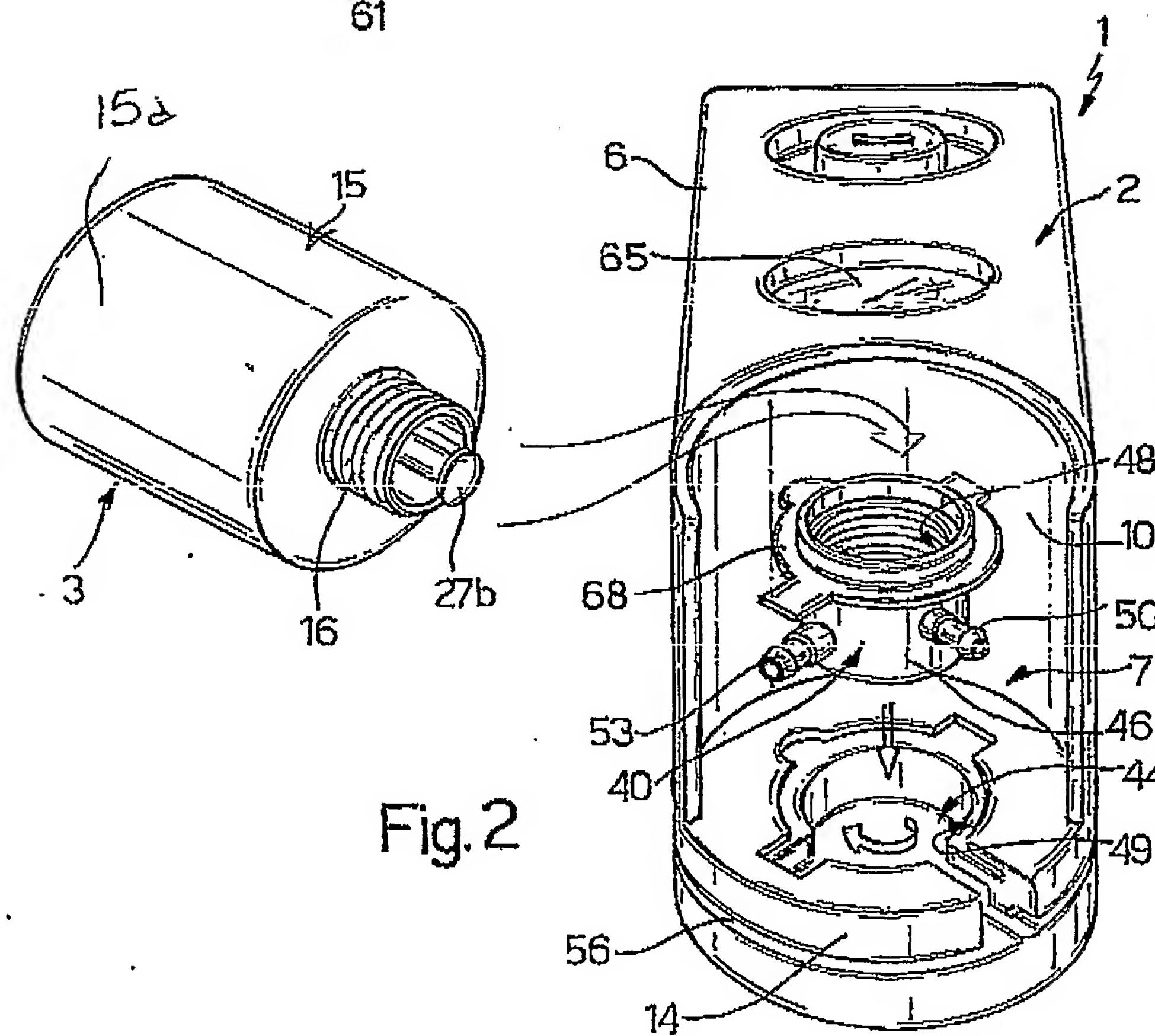


Fig. 2